

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A pump assembly for circulating a supercritical fluid, comprising:
an impeller for pumping fluid between a pump inlet and a pump outlet; a rotating pump
shaft coupled to the impeller, wherein the pump shaft is supported by non-lubricated
corrosion resistant bearings; a rotor of a DC motor potted in epoxy and encased in a non-
magnetic material sleeve; a stator sealed from the fluid via a polymer; wherein a portion
of the supercritical fluid is diverted through a plurality of non-lubricated bearings
configured to be corrosion resistant to the supercritical fluid and through an alternative
flow path between the rotor and stator bearings.

Claim 2 (cancelled): The pump assembly of claim 1, wherein the bearings are non-lubricated.

Claim 3 (original): The pump assembly of claim 1, further including an electrical controller
suitable for operating the pump assembly, wherein the electrical controller comprises a
commutation controller for sequentially energizing windings of the stator.

Claim 4 (original): The pump assembly of claim 1, wherein the pump is of centrifugal type.

Claim 5 (currently amended): The pump assembly of claim 1, wherein the bearings are made of
silicon nitride balls with bearing races made of [[an]] a steel alloy of carbon, nitrogen,
silicon, and chromium. Cronidur® 30.

Claim 6 (previously presented): The pump assembly of claim 1, wherein the bearings are
selected from the group consisting of ceramic bearings, hybrid bearings, full complement
bearings, foil journal bearings, and magnetic bearings.

Claim 7 (previously presented): The pump assembly of claim 1, wherein the polymer sleeve is a
Polyetheretherketone sleeve.

Claim 8 (original): The pump assembly of claim 1, wherein the non-magnetic material is stainless steel.

5 Claim 9 (original): The pump assembly of claim 1, wherein the impeller has a diameter between 1 inch and 2 inches.

Claim 10 (original): The pump assembly of claim 1, wherein the rotor has a diameter between 1.5 inches and 2 inches.

10 Claim 11 (original): The pump assembly of claim 1, wherein the rotor has a maximum speed of 60,000 rpm.

Claim 12 (original): The pump assembly of claim 1, wherein an operating pressure of the pump assembly is in the range 1,500-3,000 psi.

15 Claim 13 (original): The pump assembly of claim 1, wherein the supercritical fluid operates in the range 40-100 degrees Celsius.

20 Claim 14 (original): The pump assembly of claim 1, wherein the supercritical fluid is supercritical carbon dioxide.

Claim 15 (original): The pump assembly of claim 1, wherein the supercritical fluid is supercritical carbon dioxide admixed with an additive or solvent.

25 Claim 16 (previously presented): The pump assembly of claim 1, wherein the diverted supercritical fluid, after leaving the pump assembly, is then returned back to the pump inlet through an outer flow path, the outer flow path including a filter to clean particles generated by a motor assembly.

30 Claim 17 (original): The pump assembly of claim 1, wherein the motor is a variable speed motor.

Claim 18 (original): The pump assembly of claim 1, wherein the motor is an induction motor.

Claim 19 (original): The pump assembly of claim 1, wherein the non-magnetic material sleeve is welded to the pump shaft such that torque is transferred through the non-magnetic material sleeve.

5 Claim 20 (previously presented): A pump assembly for circulating a supercritical fluid, comprising: an impeller for pumping fluid between a pump inlet and a pump outlet; a rotating pump shaft coupled to the impeller, wherein the pump shaft is supported by non-lubricated bearings; a rotor of a DC motor potted in epoxy and encased in a stainless steel sleeve, the stainless steel sleeve being welded to the pump shaft such that torque is
10 transferred through the stainless steel sleeve; and a stator sealed from the fluid via a Polyetheretherketone sleeve, the rotor and the stator defining an alternative flow path used to divert a portion of the supercritical fluid through the pump assembly and then back to the pump inlet through an outer flow path.

15 Claim 21 (original): The pump assembly of claim 20, further including an electrical controller suitable for operating the pump assembly, wherein the electrical controller comprises a commutation controller for sequentially energizing windings of the stator.

20 Claim 22 (original): The pump assembly of claim 20, wherein the pump is of centrifugal type.

Claim 23 (original): The pump assembly of claim 20, wherein the impeller has a diameter between 1 inch and 2 inches.

25 Claim 24 (original): The pump assembly of claim 20, wherein the rotor has a diameter between 1.5 inches and 2 inches.

Claim 25 (original): The pump assembly of claim 20, wherein the rotor has a maximum speed of 60,000 rpm.

30 Claim 26 (original): The pump assembly of claim 20, wherein an operating pressure of the pump assembly is in the range 1,500-3,000 psi.

Claim 27 (original): The pump assembly of claim 20, wherein the supercritical fluid operates in the range 40- 100 degrees Celsius.

5 Claim 28 (original): The pump assembly of claim 20, wherein the supercritical fluid is supercritical carbon dioxide.

Claim 29 (original): The pump assembly of claim 20, wherein the supercritical fluid is supercritical carbon dioxide admixed with an additive or solvent.

10 Claim 30 (currently amended): The pump assembly of claim 20, wherein the bearings can be made of silicon nitride balls combined with bearing races made of [[an]]a steel alloy of carbon, nitrogen, silicon, and chromium. Cronidur® 30.

15 Claim 31 (previously presented): The pump assembly of claim 20, wherein the bearings are selected from the group consisting of ceramic bearings, hybrid bearings, full complement bearings, foil journal bearings and magnetic bearings.

Claim 32 (original): The pump assembly of claim 20, wherein the motor is a variable speed motor.

20 Claim 33 (original): The pump assembly of claim 20, wherein the motor is an induction motor.